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COMMUNITY HEALTH OFFICER

300 LEVEL

**EPIDEMIOLOGY AND DISEASES
CONTROL**

1. Discuss communicable diseases under the following headings:

- Definition**
- Causative agents**
- Modes of transmission**
- Methods of prevention and control**

Communicable diseases are illnesses caused by pathogens such as bacteria, viruses, or parasites that can be transmitted from one person to another, either directly or indirectly.

-Causative agents: Causative agents refer to the microorganisms or pathogens that cause a disease. These can include bacteria, viruses, parasites, fungi, or other types of microorganisms that can infect a host and cause illness. Examples are:

***Bacteria: Bacteria are a type of microorganism that can cause disease. They are single-celled organisms that can be found almost everywhere. Some bacteria are harmless, while others can cause serious illnesses. Examples of diseases caused by bacteria include:**

- Tuberculosis (TB): a bacterial infection that primarily affects the lungs.**

- Cholera: a bacterial infection that causes diarrhea and dehydration.**

- Modes of transmission:

- Direct Contact: Direct contact refers to the transmission of a disease through**

**physical contact with an infected person.
This can include:**

-Skin-to-skin contact: touching, shaking hands, or other physical contact with an infected person.

- Sexual contact: transmission of a disease through sexual activit

**-Mother-to-child transmission:
transmission of a disease from mother to child during pregnancy or childbirth.**

**• Indirect Contact: Indirect contact refers to the transmission of a disease through a contaminated object, substance, or vector.
This can include:**

- Contaminated food and water: eating or drinking food and water that has been contaminated with a pathogen.

- Vectors like mosquitoes: transmission of a disease through the bite of an infected

mosquito or other vector.

-Fomites: transmission of a disease through contact with a contaminated object, such as a doorknob or utensil.

*** Methods of prevention and control: Methods of prevention and control refer to the strategies and interventions used to prevent the spread of a disease and control its impact. Examples include:**

- Vaccination: immunization against diseases such as measles, polio, and influenza.

- Improved sanitation and hygiene: proper hand washing, use of latrines, and safe disposal of waste.

- Vector control: use of insecticides, bed nets, and other measures to control mosquito populations.

- **Education and awareness: promoting awareness about disease transmission and prevention through community outreach and education.**

2. Explain the terms endemic, epidemic, and pandemic, giving examples.

***Endemic: A disease that is consistently present within a specific geographic area or population is said to be endemic. The disease is typically present at a relatively low level, and the number of cases remains relatively stable over time**

Examples: Malaria is endemic in many parts of Nigeria, particularly in rural areas.

- **Yellow fever is endemic in some parts of West Africa, including Nigeria.**

- **River blindness (Onchocerciasis) is endemic in some parts of Nigeria, particularly in rural areas.**

***Epidemic : An epidemic occurs when there is a sudden increase in the number of cases of a disease within a specific area or population. The increase is often unexpected and may be caused by a variety of factors, such as a new strain of the disease, a breakdown in public health measures, or changes in human behavior.**

Examples:- A cholera outbreak in a refugee camp would be considered an epidemic.

- **The 2017 meningitis outbreak in Nigeria's North East region was an epidemic.**

- **The 2020 Lassa fever outbreak in Nigeria was an epidemic.**

***Pandemic: A pandemic is a widespread epidemic that affects multiple countries or continents. Pandemics are often caused by highly infectious diseases that can spread rapidly around the world.**

Examples: The COVID-19 pandemic, which spread to nearly every country in the world, is a recent example of a pandemic.

- **The 2009 swine flu pandemic, which affected many countries worldwide.**

- **The 1918 Spanish flu pandemic, which was one of the deadliest pandemics in human history.**

3. Define and distinguish between incidence and prevalence. Explain their importance in epidemiology with examples.

***Definition*:**

- **Incidence** refers to the number of new cases of a disease or condition that occur within a population over a specific period of time, usually a year. It is a measure of the rate at which new cases are occurring.

- **Prevalence** refers to the total number of cases of a disease or condition present in a population at a given time, regardless of when they first occurred. It includes both new and existing cases.

-Difference between incidence and prevalence

The main difference between incidence and prevalence is that incidence measures the rate of new cases, while prevalence measures the total burden of disease, including both new and existing cases.

1. Incidence is a measure of the rate at which a disease is spreading, while prevalence is a measure of the overall impact of the disease on the population. Examples: Incidence - In 2020, there were 10,000 new cases of tuberculosis reported in Nigeria.

- The incidence of malaria in Nigeria was 300 cases per 1,000 people per year.

- A study found that the incidence of breast cancer in Nigerian women was 50 cases per 100,000 people per year.

-Prevalence:

In 2020, there were 50,000 people living with tuberculosis in Nigeria.

- The prevalence of HIV in Nigeria was 1.3% in 2020, meaning approximately 2.5 million people were living with HIV.

- A survey found that the prevalence of hypertension in Nigerian adults was 30%, indicating a significant burden of disease.

***Importance in epidemiology:**

- Incidence helps epidemiologists understand the rate at which a disease is**

spreading and identify risk factors.

- **Prevalence helps epidemiologists understand the burden of a disease on a population and plan healthcare services.**

Examples: If the incidence of malaria is high in a particular region, epidemiologists may investigate to identify the cause and implement control measures.

- **If the prevalence of HIV is high, epidemiologists may recommend increasing access to treatment and care services.**

- **A high prevalence of hypertension may lead epidemiologists to recommend lifestyle interventions and screening programs to reduce the burden of disease.**

4. Describe the measures used in controlling communicable diseases at the community level.

- Measures used in controlling communicable diseases at the community level:

•Health Education: Educating the community about the causes, symptoms, and prevention of communicable diseases is a crucial measure in controlling their spread.

•Immunization: Vaccination programs can help prevent the spread of communicable diseases such as measles, polio, and influenza.

•Environmental Sanitation: Improving sanitation and hygiene in the community, such as providing clean water, proper waste disposal, and latrines, can help control the spread of diseases like cholera and typhoid.

- **Vector Control:** Controlling vectors like mosquitoes and flies can help prevent the spread of diseases like malaria, dengue fever, and yellow fever.

- **Case Detection and Treatment:** Early detection and treatment of cases can help prevent the spread of diseases like tuberculosis and HIV.

- **Contact Tracing:** Identifying and monitoring individuals who have come into contact with an infected person can help prevent the spread of diseases like Ebola and SARS.

- **Isolation and Quarantine:** Isolating infected individuals and quarantining those who have been exposed can help prevent the spread of highly infectious diseases.

- **Community Participation:** Encouraging community participation in disease control efforts, such as reporting suspected cases and participating in vaccination programs, is essential for success.

Examples: In Nigeria, community-based programs have been implemented to control the spread of diseases like malaria, tuberculosis, and HIV.

- The use of insecticide-treated bed nets and indoor residual spraying has been effective in controlling malaria in some communities.

- Community health workers have played a crucial role in detecting and treating cases of diseases like tuberculosis and HIV in rural areas.

These measures can be implemented at the community level to control the spread of

communicable diseases and improve public health.

5. Write short notes on the following:

- a. Epidemiological triangle**
- b. Vehicle-borne transmission**
- c. Point prevalence and period**

a. Epidemiological Triangle:

The epidemiological triangle is a model used to explain the causation of diseases. It consists of three components:

- Agent: The causative agent of the disease, such as a bacteria or virus.**
- Host: The individual or population that is susceptible to the disease.**
- Environment: The external factors**

that contribute to the transmission of the disease, such as climate, sanitation, and social factors.

The epidemiological triangle is a useful tool for understanding the complex interactions between the agent, host, and environment that lead to disease transmission.

-b. Vehicle-Borne Transmission:

Vehicle-borne transmission refers to the transmission of a disease through a contaminated vehicle, such as:

- Food: Contaminated food can transmit diseases like salmonellosis and E. coli.**

- Water: Contaminated water can transmit diseases like cholera and typhoid.**

- Air: Contaminated air can transmit diseases like influenza and tuberculosis.**

Vehicle-borne transmission can occur through ingestion, inhalation, or contact

with the contaminated vehicle.

c. Point Prevalence and Period Prevalence:

- **Point Prevalence:** The number of cases of a disease present in a population at a specific point in time.

- **Period Prevalence:** The number of cases of a disease present in a population over a specific period of time, such as a year.

Point prevalence provides a snapshot of the disease burden at a specific time, while period prevalence provides a broader picture of the disease burden over a longer period.